

CLAIMS

1. A method of analysing a sample, comprising:
combusting the sample in a combustion chamber (2) to produce combustion products;
collecting the combustion products from the combustion chamber (2) into a reservoir (15) comprising a gas displacer;
operating the gas displacer to force the collected combustion products out of the reservoir (15) to a measuring chamber (16,30) under pressure; and
measuring at least one property of the combustion products in the measuring chamber (16,30).
2. The method according to Claim 1, wherein the reservoir (15) is connected by a first connection (11) to the combustion chamber (2) and is connected by a second connection (14) to the measuring chamber (16, 30), comprising shutting off the second connection (14) to the measuring chamber (16, 30) during the collection of the combustion products and shutting off the first connection (11) to the combustion chamber (2) during the feeding of the combustion products to the measuring chamber (16, 30).
3. The method according to Claim 1, wherein the speed with which the combustion products collected in the reservoir (15) are fed to the measuring chamber (16, 30) is higher than the speed with which the combustion products are removed from the combustion chamber to the reservoir (15).
4. The method according to claim 1, wherein the measuring chamber (16, 30) has a discharge line (18) for removing combustion products, further comprising shutting off the discharge line (18) during the feeding of the combustion products to the measuring chamber (16, 30).
5. The method according to Claim 4, wherein substantially all of the combustion products are forced into the measuring chamber (16,30) prior to the measurement step.

6. The method according to claim 1, wherein the sample is substantially completely burnt in the combustion chamber (2) and substantially all the combustion products formed are collected in the reservoir (15).
7. The method according to claim 1, comprising the conditioning of the combustion products between combustion in the combustion chamber (2) and measurement in the measuring chamber (16, 30).
8. The method according to Claim 7, wherein the conditioning comprises drying the combustion products.
9. The method according to claim 1, wherein the combustion products are collected into the reservoir (15) while the sample is being combusted.
10. The method according to claim 1, wherein the combustion products are provided to the measuring chamber (16,30) once substantially all of the combustion products have been collected into the reservoir (15).
11. The method according to claim 1, wherein the gas displacer comprises a piston (21) movably incorporated in the reservoir (15).
12. The method according to claim 11, wherein the combustion products are drawn into the reservoir (15) by the opening action of the piston (21).
13. An analysis device for analysing a sample, the device comprising:
 - a combustion chamber (2) arranged to combust the sample to produce combustion products;
 - a reservoir (15) comprising a gas displacer, the reservoir being downstream of the combustion chamber (2) and arranged to collect the combustion products from the combustion chamber (2); and

a measuring chamber (16,30) downstream of the reservoir (15) and arranged to receive the collected combustion products from the reservoir (15) and to measure at least one property of the combustion products,

wherein the gas displacer is operable to force the collected combustion products out of the reservoir (15) to the measuring chamber (16,30) under pressure.

14. The analysis device according to claim 13, wherein the combustion chamber (2) has an inlet opening (3) for feeding the sample and has an outlet opening (5) for removing the combustion products.

15. The analysis device according to claim 14, wherein the measuring chamber (16, 30) is connected to the outlet opening (5) of the combustion chamber (2) and the reservoir (15) is connected by a first connection (11) to the combustion chamber (2) and is connected by a second connection (14) to the measuring chamber (16, 30).

16. The analysis device according to claim 13, wherein the measuring chamber (16, 30) has measurement means for measuring the at least one property of the combustion products.

17. The analysis device according to claim 15, wherein shut-off means (10) are provided for shutting off the second connection (14) to the measuring chamber (16, 30) during the collection of the combustion products and shutting off the first connection (11) to the combustion chamber (2) during the feeding of the combustion products to the measuring chamber (16, 30).

18. The analysis device according to claim 17, wherein the shut-off means comprises a three-way stopcock (10) that is connected to the first and second connection (11, 14).

19. The analysis device according to claim 13, wherein the measuring chamber (16, 30) has a discharge line (18) for removing combustion products, which discharge line (18) can be shut off by a valve (19).

20. The analysis device according to claim 13, wherein the gas displacer comprises a cylinder (20) in which a piston (21) is movably incorporated.
21. The analysis device according to Claim 20, wherein the cylinder (20) comprises two chambers (23, 24) separated by the movable piston (21), wherein one of the chambers forms a filling space (23) for the collection of the combustion products and the piston (21) can be energized by a stepping motor in one direction to force the combustion products out of the filling chamber (23).
22. The analysis device according to claim 13, wherein the reservoir (15) is confined by walls that are lined on the inside with a lining material that does not react with sulphur and/or nitrogen.
23. The analysis device according to claim 13, wherein a conditioning unit (7) for conditioning the combustion products is fitted between the combustion chamber (2) and the measuring chamber (16, 30).
24. The analysis device according to Claim 23, wherein the conditioning unit (7) comprises a tube (8) that is made of a material through which water can diffuse.
25. The analysis device according to claim 24, wherein the material is a copolymer such as Nafion[®].
26. The analysis device according to claim 13 comprising a gas source for continuously passing a gas through the analysis device.
27. The analysis device according to Claim 26, wherein the gas comprises oxygen and/or an inert gas, such as argon.
28. A method of analysing a sample, such as a fuel, comprising feeding the sample to a combustion chamber (2), the at least partial combustion of the sample in the combustion

chamber (2) to combustion products, the removal of the combustion products from the combustion chamber (2), the feeding of the combustion products to a measuring chamber (16, 30) and the measurement of a component of the combustion products in the measuring chamber (16, 30), characterized in that the combustion products are removed from the combustion chamber (2) to a reservoir (15) comprising a gas displacer, the combustion products being collected in the reservoir (15), after which the gas displacer is operated to force the collected combustion products out of the reservoir (15) to the measuring chamber (16, 30) under pressure.

29. An analysis device for analysing a sample, comprising a combustion chamber (2) for at least partially burning the sample to combustion products, which combustion chamber (2) has an inlet opening (3) for feeding the sample and has an outlet opening (5) for removing the combustion products, and also a measuring chamber (16, 30) that is connected to the outlet opening (5) of the combustion chamber (2), wherein the measuring chamber (16, 30) has measurement means for measuring a component of the combustion products, characterized in that a reservoir (15) is provided for the temporary collection of the combustion products, which reservoir is connected by a first connection (11) to the combustion chamber (2) and is connected by a second connection (14) to the measuring chamber (16, 30), the reservoir comprising a gas displacer operable to force the collected combustion products out of the reservoir (15) to the measuring chamber (16,30) under pressure.